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IMPROVED 2-STAGE LARGE BANDWIDTH AMPLIFIER USING DIODES IN THE PARALLEL FEEDBACK STRUCTURE

Abstract

There is disclosed an improved 2-stage large bandwidth amplifier (20) comprised of two stages formed by first and second bipolar transistors (Q1,Q2) configured in common emitter that are connected in series with their emitters connected to a first supply voltage (Gnd). The input signal (V_{in}) is applied to the base of said first transistor via an input terminal (11), while the output signal (V_{out}) is available at an output terminal (12) connected to the collector of said second transistor. A parallel feedback structure (13') is provided. It consists, in a first branch, of two diodes (D1,D2) in series connected between a second supply voltage (Vcc) and the collector of the second bipolar transistor, and in another branch of a third bipolar transistor (Q3) configured in emitter follower with a resistor (Rf) in the emitter. The base and the collector of said third bipolar transistor are respectively connected to the common node of said diodes and to said second supply voltage. The resistor is connected to the common node of said first and

second transistors to inject the feedback signal (V_f). Because, the two diodes have a low internal resistance and reduce the collector capacitance of the second transistor, the overall bandwidth of the improved amplifier is significantly extended in the very high frequencies (e.g. 20 GHz and above).